

III. Remarks

Claims 1-38 were originally filed in the present application. Claims 3, 4, 7, 8, 15, 16, 22, 24, 30, 33 and 34 were subsequently cancelled without prejudice or disclaimer, and claims 19-21 are presently cancelled without prejudice or disclaimer. No claims have been added. Consequently, claims 1, 2, 5, 6, 9-14, 17, 18, 23, 25-29, 31, 32 and 35-38 are currently pending in the present application.

Reconsideration of this application in light of the following remarks is respectfully requested.

Rejections under 35 U.S.C. §112

The Examiner has rejected claims 19-21 under 35 U.S.C. §112, first paragraph, alleging that the specification does not sufficiently enable persons skilled in the pertinent art. However, while Applicants do not necessarily agree with the Examiner's allegation, claims 19-21 have been rejected without prejudice or disclaimer, although solely in an effort to expedite prosecution. Consequently, the §112 rejection of claims 19-21 is rendered moot.

Rejections under 35 U.S.C. §102(e)

Claim 1

The Examiner has rejected claim 1 and its dependent claims 2, 5, 6, and 9-12 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Number 6,830,962 to Guarini, et al. ("Guarini"). The PTO provides in M.P.E.P. §2131 that, to anticipate a claim, a reference must teach each and every element of the claim. Therefore, to support a §102(e) rejection with respect to claim 1, Guarini must contain all of the above-claimed elements of claim 1. However, in a manner that is substantially identical to the shortcomings of Furukawa described in Applicants' response to the Non-Final Office Action of June 1, 2005, Guarini fails to disclose shallow trench isolation, at least in the context of the present application, and as described below.

On page 4 of the Examiner's Final Office Action, the Examiner asserts that Guarini teaches a shallow trench isolation (feature 40 in Fig. 9, which is formed from feature 26 in Figs. 3-8), such shallow trench isolation allegedly spanning the thickness of a first semiconductor substrate (feature 16 in Figs. 1-9) and extending into a second semiconductor substrate (feature 12 in Figs. 1-9). Applicants respectfully traverse the Examiner's assertion because the Examiner has misconstrued the "shallow trench isolation" recited in claim 1 of the present application. That is, the Examiner has asserted that the spacer

26 taught in Guarini teaches a shallow trench isolation feature, but the Guarini spacer 26 is clearly not shallow trench isolation.

Guarini provides that the “spacer 26 is formed on the exposed sidewalls 24 in the at least one opening 22, providing the structure shown, for example, in FIG. 3. The spacer 26, which is formed by deposition and etching, is comprised of an insulating material such as, for example, an oxide.” (Column 6, line 64 through column 7, line 2). Those skilled in the art readily recognize that shallow trench isolation is not formed on the exposed sidewalls of an opening, but is instead formed in an opening – spacers, not shallow trench isolation, are formed on the exposed sidewalls of an opening. Those skilled in the art will also readily recognize that shallow trench isolation is not formed by deposition and etching in the context of Guarini (see Guarini Figs. 2 and 3), but is instead formed by etching a recess and then depositing a material to fill the recess – spacers, not shallow trench isolation, are formed by depositing a material in an opening and then etching the material. Thus, those skilled in the art will readily recognize that it is clear that the Guarini spacer 26 is not shallow trench isolation.

Explaining further, and as provided in paragraph [0031] of the present application, shallow trench isolation is formed by etching or otherwise patterning a recess (extending substantially through the substrate 120 and partially into the substrate 110 in the embodiment shown in Fig. 2B of the present application) and subsequently filling the recess with a bulk dielectric material. However, Guarini does not teach forming the spacer 26 by patterning a recess in a substrate and subsequently filling the recess with a bulk dielectric material. In contrast, with reference to Guarini Figs. 2 and 3, the Guarini spacer 26 is formed by depositing a layer of insulating material on (a) the mask 20, (b) the sidewalls 24 of the opening 22, and (c) that portion of the semiconductor layer 12 which was exposed by previously etching through the mask 20, and only thereafter is the deposited layer of insulating material subsequently etched to achieve the profile of the spacer 26 shown in Guarini Fig. 3.

In a conventional manner, the spacer 26 taught in Guarini is merely a lining that is deposited on the sidewalls 24 of the opening 22 – and not filling the opening 22. The Guarini spacer 26 is clearly different from the shallow trench isolation that is presently claimed and that is described in the present application because the Guarini spacer 26 does not substantially fill the opening 22 in which the spacer 26 is formed, which is a characteristic of shallow trench isolation that is not only well-known to persons skilled in the pertinent art, but that is also described in the detailed description of the present application. Moreover, the Guarini spacer 26 is also clearly different from the shallow trench isolation that is presently claimed and described in the present application because the Guarini spacer 26 is formed by first depositing material in an opening and then etching the material, in contrast to initially etching a recess in a first material and then depositing a second material in the recess.

Thus, at least because of these disparate characteristics of the Guarini spacer 26 relative to the presently-claimed shallow trench isolation, among other disparate characteristics, the Guarini spacer 26 does not disclose shallow trench isolation in the context of claim 1 of the present application. Accordingly, Guarini fails to teach each and every element recited in claim 1. Therefore, Applicants respectfully request the Examiner withdraw the §102(e) rejection of claim 1 and its dependent claims.

Claim 13

The Examiner has also rejected claim 13 and its dependent claims 14, 17, 18, 23, 25, and 26 under 35 U.S.C. §102(e) as being anticipated by Guarini. As above, supporting a §102(e) rejection with respect to claim 13 requires that Guarini must disclose all of the elements of claim 13. However, as described above, Guarini fails to disclose shallow trench isolation, at least in the context of claim 13. Therefore, a rejection of claim 13 and its dependent claims under 35 U.S.C. §102(e) cannot be supported by Guarini. Consequently, Applicants respectfully request the Examiner withdraw the §102(e) rejection of claim 13 and its dependent claims.

Claim 27

The Examiner has also rejected claim 27 and its dependent claims 28, 29, 31, 32, and 35-38 under 35 U.S.C. §102(e) as being anticipated by Guarini. As above, supporting a §102(e) rejection with respect to claim 27 requires that Guarini must disclose all of the elements of claim 27. However, as described above, Guarini fails to disclose shallow trench isolation, at least in the context of claim 27. Therefore, a rejection of claim 27 and its dependent claims under 35 U.S.C. §102(e) cannot be supported by Guarini. Consequently, Applicants respectfully request the Examiner withdraw the §102(e) rejection of claim 27 and its dependent claims.

IV. Conclusion

In view of all of the above, the allowance of claims 1, 2, 5, 6, 9-14, 17, 18, 23, 25-29, 31, 32 and 35-38 is respectfully requested. The Examiner is invited to call the undersigned at the below-listed telephone number if a telephone conference would expedite or aid the prosecution and examination of this application.

Respectfully submitted,



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Dated:

1/20/06

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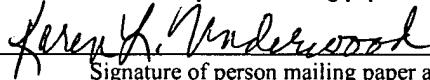
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DATE OF DEPOSIT: January 20, 2006

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